



IB MYP Year 1

Year 6 ATYP

Assessment #1



PATTERN PAPER

Name: _____

Class: _____

Unit Question: To what extent can algebra model the world around us?

Area of Interaction: Human Ingenuity

Teachers: Mr. Slosberg & Ms. Yeung

Start Date: November 6-7, 2013

Due Date: November 13-4, 2013

Interview: Varies

Task: Find a real life pattern. Clean up the data to make the pattern regular. Write an algebraic equation describing your pattern. Evaluate how close your algebraic pattern came to the real life pattern. Consider how it could have been better. You will be interviewed at the end by Mr. Slosberg.

IN YOUR BOOK:

☒ **Math Matters 1**, Chapter 6D on "Algebra"

INSTRUCTIONS:

- ☒ Read the **instructions** and **rubric** carefully.
- ☒ Show all **steps** and proper **units**--you are being evaluated on **how** you figured out the equation, not on getting it right per se.
- ☒ Submit **your own work**. Any copying or other cheating, will automatically receive a 0.
- ☒ You are allowed to use a non-electronic **dictionary** & a **calculator**.

ASSESSMENT:

☒ This task assesses Criteria B, C & D.

PRESENTATION:

Make sure you explain the math clearly enough for anyone to understand what you have done. Make sure:-

- ☒ You have a title.
- ☒ You have a sequence of pictures (preferably colored) to illustrate your pattern.
- ☒ Use brief words/math expressions as captions to explain your sequence.
- ☒ Words or math expressions should be hand-written.

ACADEMIC HONESTY:

- ☒ You are trusted by the teacher to actively research at home and come back with a real life example. The data for your sequence can come from the Internet. Please use a footnote to cite any websites you use. All work on your equation, however, must be done by you, not copied from the Internet or done by a tutor.

CRITERION B: INVESTIGATING PATTERNS

| Achievement level | Task Specific Rubric | IBO Published Descriptor | Student's Self-Evaluation |
|--|--|--|------------------------------|
| 0 | The student does not submit a poster of acceptable quality. | The student does not reach a standard described by any of the descriptors given below. | |
| 1–2 Simple Patterns | The student is able to show a pattern of any kind. Textbook examples are guided and therefore limited to a level 2. | The student applies, with some guidance , mathematical problem-solving techniques to recognize simple patterns. | |
| 3–4 General Rule | The student is able to identify correctly the type of sequence (suggesting a general rule). | The student applies mathematical problem-solving techniques to recognize patterns, and suggests relationships or general rules. | Teacher's Final Grade |
| 5–6 Select Techniques | The student selects their own techniques for organizing and analyzing their pattern. The general rule they describe (in words or with an equation) is consistent with the data they generated. | The student selects and applies mathematical problem-solving techniques to recognize patterns, describes them as relationships or general rules, and draws conclusions consistent with findings. | |
| 7–8 Why Does It Work? | Student is able to show, or comment on the lack of, a general formula for n^{th} term, explaining why that formula fits their data. When asked, the student should be able to find a future value by plugging in a new value for n or given a new value for the sequence should determine n by solving an equation in one unknown. | The student selects and applies mathematical problem-solving techniques to recognize patterns, describes them as relationships or general rules, draws the correct conclusions consistent with the correct findings, and provides justifications or proofs . | |
| | | | (0-8) |

Criterion C: COMMUNICATION IN MATHEMATICS

| Achievement level | Task Specific Rubric | IBO Published Descriptor | Student's self-evaluation |
|-------------------|--|--|------------------------------|
| 0 | The student does not reach a standard described by any of the descriptors given below. | | |
| 1–2 | It is difficult to follow your paper. I cannot figure out your pattern without help. Your data may be laid out in a way that I can't understand it. | <ul style="list-style-type: none"> The student shows basic use of mathematical language and/or forms of mathematical representation. The lines of reasoning are difficult to follow. | |
| 3–4 | You clearly communicate your data, pattern, and/or equation, but you don't communicate everything or you don't communicate it in a logical manner. The forms of representation we are looking for include lists, tables, graphs, and algebraic equations. | <ul style="list-style-type: none"> The student shows sufficient use of mathematical language and forms of mathematical representation. The lines of reasoning are clear though not always logical or complete. The student moves between different forms of representation with some success. | Teacher's Final Grade |
| 5–6 | Your paper is logical and complete while fitting on one piece of paper. You move effectively between the different forms of representation. The forms of representation we are looking for include lists, tables, graphs, and algebraic equations. | <ul style="list-style-type: none"> The student shows good use of mathematical language and forms of mathematical representation. The lines of reasoning are concise, logical and complete. The student moves effectively between different forms of representation. | |
| | | | (0-6) |

Criterion D: Reflection and Evaluation

| Achievement level | Task Specific Rubric | IBO Published Descriptor | Student's self-evaluation |
|----------------------------------|---|--|---------------------------|
| 0 | No attempt at reflection is shown. | The student does not reach a standard described by any of the descriptors given below. | (0-6) |
| 1–2 Attempt Reflection | The student's comments connect the pattern to their real life example. | The student attempts to explain whether his or her results make sense in the context of the problem. The student attempts to describe the importance of his or her findings in connection to real life. | |
| 3–4 Does It Make Sense | The student examines whether the pattern found will strictly describe the real life situation including how close they expect their answers to be to the numbers generated by their general rule. | The student correctly but briefly explains whether his or her results make sense in the context of the problem. The student describes the importance of his or her findings in connection to real life where appropriate. The student attempts to justify the degree of accuracy of his or her results where appropriate. | Teacher's Final Grade |
| 5–6 Be Critical | The student critically explains why the pattern found would or would not strictly apply to the real life situation. The explanation could include other techniques which may give a different answer, ways in which real life may be different from the ideal mathematical world (and how different it could be), or ways in which the mathematical methods (either data generation methods or data analysis methods) used might be improved. | The student critically explains whether his or her results make sense in the context of the problem. The student provides a detailed explanation of the importance of his or her findings in connection to real life. The student justifies the degree of accuracy of his or her results where appropriate. The student suggests improvements to his or her method where appropriate. | (0-6) |